The Beagle, Records of the Northern Territory Museum of Arts and Sciences, 1991 8(1):121-134

NOTE ON SOME RARE AND ABERRANT AUSTRALIAN CRABS.

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ABSTRACT

Four rare and aberrant species of brachyuran crabs (Crustacea: Decapoda: Brachyura) are studied from Australian waters including the majid *Planotergum mirabile*, the pilumnid *Calmania prima*, the eumedonid *Rhabdonotus pictus* and the portunid *Brusinia brucei*. The systematic status and position of these species are reconsidered, their geographical distributions are completed, a new genus and species (*Brusinia brucei*) is described, new subfamily Planoterginae and new tribes Calmaniini and Brusiniini are erected.

KEYWORDS: Australian waters, brachyuran crabs, *Brusinia* gen.nov., *Calmania*, *Planotergum*, *Rhabdonotus*.

INTRODUCTION

During the course of a benthic survey of the North-West Shelf of Western Australia Commonwealth Scientific and Industrial Research Organization (CSIRO) RV *Soela*, under the leadership of Dr Trevor Ward, produced a number of unusual brachyuran crabs. I received a small collection of these crabs for taxonomic study, which were found to be very interesting from both systematic and biogeographical points of view. The species identified are either extremely rare or new to the Australian fauna, or their systematic positions are very obscure and need further elucidation. The collection includes the following species: *Planotergum mirabile* Balss, *Calmania prima* Laurie, *Rhabdonotus pictus* A. Milne Edwards and *Brusinia brucei* gen. et sp.nov., which is described in this paper. The material is deposited in the Northern Territory Museum of Arts and Sciences. Abbreviations used in the text: BMNH, Natural History Museum, London; CL, carapace length; CW, carapace width; NSMT, National Science Museum, Tokyo; NTM, Northern Territory Museum, Darwin.

SYSTEMATICS

Family Majidae Samouelle
Planotergum mirabile Balss, 1935
(Fig. 1)

Planotergum mirabile Balss, 1935:36-38, figs 1-3; 1957: 1628; Serène 1965a:457-488, figs 1-4, pls 1-2; Griffin and Tranter 1986:92. *Anomalopisa incongrueus* Johnson, 1965:174-180, fig. 1.

Material. NTM Cr.0007873: 1 female, CL 11.4 mm, CW 9.0 mm, *Soela* cruise ASO 283, Op. 46, stn. (NWS 46), 19°06.5' S, 118°00.15' E, 86.9m; 26.2° C, 16 April 1983, coll. P. Blyth. 1 female, CL 12.0 mm, *Soela* cruise ASO 383, stn. B7 BT, 1 male, CL 7.0,, CW 5.2, *Soela* stn. B7 BT. (Second female specimen with carapace encrusted, preventing measurement of width).

Historical background. On 12 June 1906, a pair of crabs were collected from a depth of 3m northwest of Denham, Shark Bay, Western Australia. Balss (1935) described these specimens under the name *Planotergum mirabile*. No further examples of this species were collected until 1953, when two females of this species were sampled from Pulau Sikijang Pelepah, Singapore, and described by Johnson (1965) under the name of *Anomalopisa incongruens*. Thereafter Romimohtarto sampled a female specimen in the Java Sea on April 1963, during the "Jalanidhi" cruises and reported by Serène (1965a). Recently Griffin and Tranter (1986) reported two female specimens preserved in the Australian Museum, Sydney, one from Roebuck Bay, Western Australia and another from Keppel Islands, Queensland.

Description. Balss's original description was very short, but the subsequent reports of Johnson and Serène are detailed and well illustrated so that a further general description of

this species is not necessary. I would only like to add the description of the male first pleopod. Male first pleopod (Fig. 1) is elongated and slender, only slightly curved in the middle portion, proximally bulbous, distally swollen, ending in a blunt apex extending little beyond the aperture. On the subterminal swelling, several tubercles in a longitudinal row and a longitudinal row of 6 bristles. The present specimens agree closely with the previous description except for some small differences in length and density of setae in the callosities of the female abdomen. In the first female there are many long plumose setae on the frontal ridge of the pseudorostrum, ambulatory legs and ridges of the carapace, especially posteriorly; sparse long silky setae are present on the surface of the carapace; the anterior ridge of the abdomen is covered by short dense setae, so that the telson is almost completely obscured. In the second female, the telson is readily visible and the entire abdomen sparsely setose. The abdomen of the first female shows distinct callosities, but these are not present in the second female specimen.

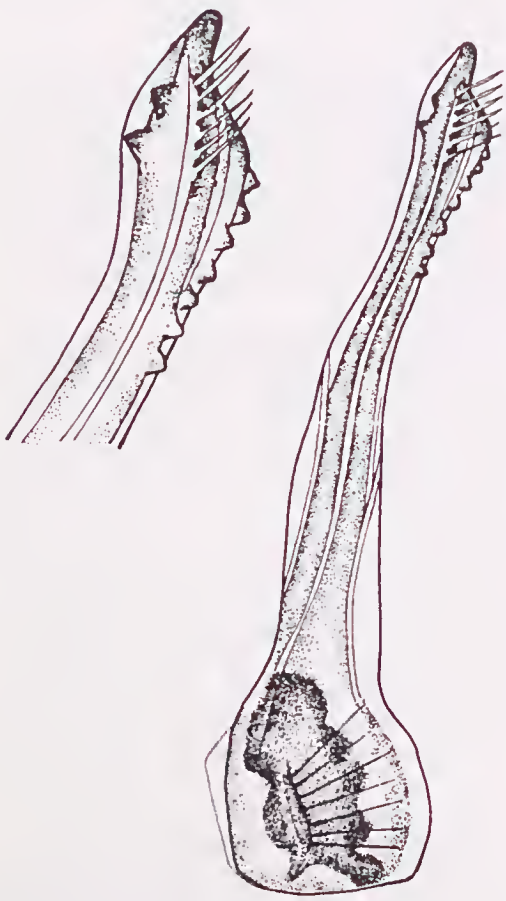

Fig. 1. *Planotergum mirabile*, male, first pleopod.

The male specimen is almost completely non-setose. The denticulate ridge on the ventral side of the crest on the first ambulatory leg is not very distinct, in contrast to the Java Sea and Singapore specimens, in which it is markedly turned out.

Distribution. The species ranges from Indonesian to northern and Western Australian waters. Probably extremely rare.

Remarks. Mode of life: The highly specific shape and structure of the appendages in *Planotergum* relate to an unknown, but undoubtedly peculiar, mode of life. Without direct field or laboratory observations, it is only possible to speculate upon its habits and micro-habitat. The position of the ambulatory legs precludes "normal" walking or swimming behaviour and climbing would be only possible with difficulty. It seems probable that most of the time it is attached to the substrate with its subchelate ambulatory legs. Serène (1965a) and Johnson (1965) have noted a superficial resemblance to parasitic isopods (Bopyridae), and Johnson (1965:180) stated: "their general build and appearance suggest parasitic or endocommensal relations, but this is contradicted by the hardness of the exoskeleton and the well developed eyes". I also consider that it probably lives as an ectoparasite or at least on the surface of some animal. It would probably be able to attach itself very strongly to the skin of the host by means of subchelate pereiopods. It would completely cover the site of attachment with its body situated in a pit on the host's outer surface, so that the dorsal surface of the carapace lies in the same plane as the host's body surface. Beneath the anterior part of the carapace, in the "external pseudo-buccal cavity", noted by Serène (1965a), the small chelipeds, with their sharp tips, could tear off morsels of the host tissues. These chelipeds cannot reach the dorsal surface of the carapace, as they do in majid crabs, which enables encrusting organisms such as bryozoans, bivalve mollusks and serpulids, to attach and grow (Serène 1965a; Johnson 1965). Other morphological features support this assumption. The sensory organs are peculiar. The antennulae lie in the previously mentioned

"external pseudo-buccal cavity", but the antennae have the terminal segment oriented dorsally so that the flagellum would be over the pseudorostrum. Auxiliary orbital cavities are also present on the median side of the merus of the second pereiopod (first ambulatory leg) into which the eye can fit when not lodged in the true orbit. In this situation the eye can see all dorsal aspects of the body.

Systematic status and position: The place of the genus *Planotergum* in the brachyuran system has been subject to different interpretations by carcinologists. The main reason for this disagreement lies in the fact that this genus is very aberrant. Its mode of life and larval stages are not known so that it is impossible to confidently place it into an existing structure of the brachyuran crabs. Accordingly, a complete re-evaluation of all known related data is needed.

In his description of the genus, Balss (1935) pointed out that *Planotergum* is "an extremely aberrant oxyrhynchous crab", the exact position of which is very difficult to establish. Balss did not say precisely in which oxyrhynchous family or subfamily it should be classified, although, from the context it is probable that he intended the family Majidae Samouelle. As a potential near relative he noted first the subfamily Acanthonychinae (present valid name Epialtinae MacLeay), and after that the genera *Encynetops* A. Milne Edwards (from the subfamily Inachinae Alcock), *Lophomicippa* Rathbun (present valid name *Micippa* Leach), and *Hemus* A. Milne Edwards. Both last noted genera at present are classified into the subfamily Mithracinae MacLeay (see Garth 1958; Griffin and Tranter 1986) with which *Planotergum* shares some unusual characters, but differs in all others, suggesting no close relationship to any of taxa mentioned above. Furthermore, Balss (1935) also noted that *Planotergum* shared some features with the genus *Crossotonotus* from a non-oxyrhynchous family Palicidae Rathbun, particularly in some of its mouth parts, although in his monograph, Balss (1957) classified *Planotergum* at the last position of the subfamily Majinae, with a remark that the systematic position of the genus was uncertain.

Thirty years later Serène (1965a) mentioned "Oxyrhynque ... aberrant" in comments related to the family Majidae. Serène (1965a:466) re-examined the possible relationships with those taxa mentioned by Balss, also incorporating a number of other possible relatives, but he concluded that the genus shared most of its features with the genus *Hemus*. The shared characters are the following: antennules, antennae, third maxillipeds, chelipeds, christiform ambulatory legs and auxiliary "external pseudo-buccal cavity". However, there are a number of differences peculiar to *Planotergum*, differentiating it from all other brachyuran crabs (i.e. form of carapace and ambulatory legs, small telson), so that the classification into an extant single higher taxon is very questionable.

A third author also independently considered the problems of the systematic status and position of the genus *Planotergum*. Johnson (1965:174), in his title of the paper wrote "a highly aberrant spider-crab" (i.e. majid crab), concluded that "They are sufficiently unlike all known members of that alliance to make their systematic position doubtful, but they appear to belong to the subfamily Pisinae of the family Majidae". Nevertheless, he was faced with some dilemmas in his final decision on the systematic status and position of *Planotergum* when he stated that "There seem to be only two reasonable solutions. Either *Anomalopisa* should be made the type of a new sub-family, or it should be treated as an aberrant member of the Pisinae" (Johnson 1965:180). Finally, Griffin and Tranter (1986) classified this genus with the Epialtinae, although in the final discussion (p.297) they remarked: "not majid".

As evident from this short historical survey of elucidation of the systematic status and position of *Planotergum*, no solution is fully satisfactory. All these authors mostly only agree on the majid nature of the crab, and from the discussions above it can be seen that *Planotergum* is very distinct from any other known brachyuran. The organization of the genus is unique and extremely aberrant from other majid subfamilies: the general shape (*planus - tergum*, i.e. plane back; specific frontal region; peculiar antennae; size and position of chelipeds; peculiar structure of ambulatory legs; form of dactyls; auxiliar ocular cavity, i.e. small hollow on the merus of the first pair of ambulatory legs for eye protection; minute telson). In these characters *Planotergum* differs from all other crabs and occupies, as an over-specialized crab, an isolated position within the majid

crabs. Accordingly, I conclude that it cannot be referred to any extant majid subfamily, and consequently I erect a new taxon for it.

Planoterginae subfam. nov.

Diagnosis. Carapace irregularly subrectangular, dorsal surface smooth, almost flat, only with very small gastric and cardiac tubercles. Front lamellar, projecting, rectangular in form, anteriorly straight. Lateral and posterior margins slightly cristiform. Anterolateral margin with four unequal lobes. Posterior margin broadly convex. Antennulae slightly oblique. Antennae with short, broad, immovable basal (2+3) segment. Fourth article lamellar, long, quadrangular, fifth article lamellar, but very small. Flagellum short. Eyestalks short, stout, cornea well developed and visible in dorsal view. Orbits incomplete. Supraorbital eave of moderate size, preorbital tubercle inconspicuous, postorbital tubercles small, separated from supraorbital eave and anteriorly cupped for eye protection. Subocular margin reduced. Epistome reduced. Third maxillipeds slender, covering the buccal cavern incompletely. Chelipeds minute, asymmetric, smooth, not visible in dorsal view. Ambulatory legs short, with only basal part covered by carapace, distal parts in the same plane as the carapace, cristiform, carpus and propodus tightly pressed against merus, dactyls short, slender transformed in corneous claw. Merus of the first pair of ambulatory legs with a small hollow for ocular protection. Abdomen in female very wide, narrow in males, telson very reduced in both sexes.

Family Pilumnidae Samouelle
Calmania prima Laurie, 1906

Calmania prima Laurie, 1906:407, pl. 1, figs 10a-b; Balss 1922:137; Gordon 1934:63, fig. 32d; Sakai 1935: 80, text fig. 14, pl. 52, fig. 3; 1939:538, pl. 65, fig. 3; Bouvier 1942:38; Stephensen 1945:222; Balss, 1957:1631; Sakai 1965:126, pl.80, fig.3; Serène 1968:77; Serène and Umali 1972:71; Sakai 1976:439, text-fig. 232, pl.176, fig. 2; Takeda 1978a: 40; Yamaguchi *et al.* 1978:26; Ng 1983:143, figs 25 a-d.

Kraussia laevis Yokoya, 1933:170, text-fig. 62.

Material. NTM Cr.0007874: 1 female, CL 7.1 mm, CW 7.2 mm, *Soela* ASO 383, stn. B7 BT, 19°30.6'S, 118°49.4'E, 38 m, 28 June 1983, coll. T. Ward.

Historical background. *Calmania prima* was described by Laurie (1906) from the Gulf of Manaar, Ceylon (Sri Lanka), and classified into the family Xanthidae MacLeay. Another similar crab, *Ralumia dahli*, was described by Balss (1933a) and also placed into the Xanthidae. Balss (1933b) expressed the opinion that *Litocheira sculptimana* Tesch, 1918, should be classified into the genus *Calmania*, and shortly thereafter some new and related species were described: *Ralumia balssi* Sakai, 1935 and *Calmania simodaensis* Sakai, 1939. In their revision of these two genera Serène and Umali (1972) concluded that the genus *Ralumia* consisted of only a single species i.e. *R. dahli*, whereas all the other species previously included belong to the genus *Calmania*, so that this genus comprises the following species: *C. prima*, *C. simodaensis*, *C. balssi* and *C. sculptimana* (the latter previously referred to *Litocheira*). In their conclusions Serène and Umali (1972:73) claimed that "it must also be noted that *Calmania* is very close, if not synonymous (?) to *Ralumia*". In his revision of the genus *Litocheira*, Türkay (1975) concluded that *L. sculptimana* (*sensu* Tesch 1918) must be included into the genus *Ralumia*. Later Sakai (1976) reclassified this species in the following manner: *Calmania prima* and *C. simodaensis*, and *Ralumia dahli* and *R. balssi*. As mentioned above, *Ralumia sculptimana* must also be classified with these species. Thus, the number of species to be included in *Ralumia* is still open, and this can only be solved after a male of *R. dahli* becomes available for study.

Description. Refer to the most recent redescription of this species (e.g. Ng 1983:143, figs 25 a-d).

Distribution. *Calmania prima* ranges from Japan to Australia (Great Barrier Reef) and Ceylon. It is rarely reported but probably not very rare.

Remarks. Systematic status and position: The majority of carcinologists followed the classification of Laurie (1906) in placing *Calmania* in the Xanthidae, although not specifying a subfamily. Several other authors such as Balss (1922, 1957), Gordon (1934) and Serène (1965b) placed *Calmania prima* in the subfamily Eumedoninae Dana of the family Parthenopidae MacLeay. Only Stephensen (1945:222),

although including the speeies in the Xanthidae, was not sure in whieh subfamily it should be included. Therefore he assigned it to a group of speeies designated as "subfamily not certain" and remarked: "probably subfamily Pilumninae". The closely related genus *Ralumia* was also initially placed by Balss (1933a) and Sakai (1935) in the family Xanthidae, but without a precise declaration as to the subfamily, although later Balss (1957) included this genus with the Pilumninae Alcock. Thereafter, Serène (1965b) placed it in the alliance Heteropanopeoidea Alcock of the subfamily Pilumninae. Serène (1968) ineluded both genera *Calmania* and *Ralumia* together in the allianee Xanthoida Alcoek (Xanthinae), and in this he was followed by Sakai (1965). Rcecntly Ng (1983:127) classified these both genera in a particular *Calmania*-group, and included, as he said, the "pilumnien" lincage of the Pilumnidae. He did not state the categorial rank of the group (e.g. subfamily or tribe) and only claimed that "their status is uncertain" (Ng 1983:143).

The fact that these two genera have previously been assigned to various alliances (i.e. tribes), subfamilies and families, indieates obvious uncertainties with their classifieation. However, according to the present state of knowledge of the braehyuran classification the genera *Calmania* and *Ralumia* have to be classified in the family Pilumnidae Samouelle. The reason for sueh a elassification is evident from the following list of shared characters: male pleopods of the pilumnid type - first pleopod is long, sinuous, distally hooked with simple apex, second is short; and the male abdomen has 7 free-articulated segments. Moreover, the similarities between the taxa include a wide bilobed front; sternal sutures 4/5 and 5/6 are interrupted, whereas 6/7 and 7/8 continuous; and a relatively narrow abdomen in females. Aecordingly, the position of these two genera is undoubtedly with the family Pilumnidae. On the other hand, their position within the family is not clear. The first reason for doubts in their affinities lies in the fact that these two genera differ from the typical pilumnids in several characters: the carapaee length and width are nearly equal; the antennulae are oblique; the front projects and is not deflexed; there is no antennal groove; the third maxillipeds do not completely cover the buccal cavern; chelipeds are symmetrical, large and atypical; ehelae are depressed, with fingers bearing pointed tips. distal part of fingers is toothed and proximal. with a large hiatus covered with rigid setae, and fingers close in an oblique plane in relation to the axis of palm; the dactyls of ambulatory legs are very long, compressed and styliform; the last pair of ambulatory legs is in the same plane as the earapace; and the male pleopods are of the pilumnid type, although the first pleopod is relatively more stout than usual pilumnids. The atypieal pereiopods found in this speeies are related to an enigmatic mode of life, and the function of these struetures eannot be interpreted further without field and/or laboratory observations.

The second reason for doubts in the affinities of these genera is related to the presently confused state of the family Pilumnidae. This family is very rich in species and genera, but the affinities between these lower taxa have not been precisely established, and thus the status of the two genera under investigation remains obseure. The pilumnid male pleopods and free-articulated male abdomen also oecur in various groups such as the Pilumninae Alcock, Eumedonidae Dana, Rhizopinae Stimpson and the genera *Dentoxanthus* Stephensen, *Galene* de Haan, *Halimede* de Haan, *Parapanope* de Man, *Heteropanope* Stimpson, *Bathypilumnus* Ng, *Itampolus* Serène and Peyrot-Clausade, and *Peleianus* Serène and Umali. A eomplete revision (re-description and reclassification) of thc whole family Pilumnidae (in fact all braehyuran crabs !) is a prerequisite for precise classifieation of these two genera. Accordingly, their placement at the present time can only be made provisionally, and their true status and position within the family Pilumnidae can only be aseertained following sueh a general revision. For the time being the two genera can be included within the family Pilumnidae in a new tribe, with the following definition.

Calmaniini trib. nov.

Diagnosis. Carapace hairy, length and width more or less equal. Front projecting, widely bilobed, not deflexed. Antennulae oblique. Basal antennal article filling orbital hiatus, next two segments enter orbital hiatus. Third maxillipeds do not completely cover the buceal cavern. Chelipeds large, symmetrie and depressed; distal part of fingers toothed and proximal with largc hiatus covered with setae;

fingers closing in an oblique plane in relation to the axis of palm. Dactyls of ambulatory legs compressed, long and styliform; last pair in the same plane as the carapace. Male pleopods of pilumnid type, but first pleopod relatively stouter.

Family Eumedonidae Dana
Rhabdonotus pictus A. Milne Edwards, 1879

Rhabdonotus pictus A. Milne Edwards, 1879:6, pl. 2, figs 2,2a; de Man 1888:325; Balss 1957:1650; Serène and Romimohtarto 1963:9, fig. 5, pl. 2, figs. F,G; Lundoer 1974:5; Shen *et al.* 1982:147, fig. 15, pl. 2, fig. 14; Ng 1983:142; Stevcic *et al.* 1988:1317.

Caphyra archeri Walker, 1887:116, pl. 9, figs 4-5; Balss 1934:506.

Material. NTM Cr.0007875: 1 male, CL 5.2 mm, CW 4.7 mm; *Soela* cruise O483, stn. B7 BT, 19° 30.8'S, 118° 49.3'E; 30 August 1983, coll. T. Ward.

Description. Refer to the most recent redescription of this species (e.g. Shen *et al.* 1982:147, fig. 15, pl. 2, fig. 14).

Distribution. *Rhabdonotus pictus* has a wide Indo-Pacific distribution, having been recorded from the Indo-west Pacific region (southern India, Andaman Sea, Singapore, Indonesia, Vietnam) and Chinese waters, and it is now reported for the first time from tropical Australian waters.

Remarks. Mode of life: The details of the mode of life of *Rhabdonotus pictus* are insufficiently known. It is known to occur as a commensal on the arms of comatulid crinoids (de Man 1888), and also on *Virgularia* sp. (Anthozoa) (Sankarankutty, in Serène and Romimohtarto 1963).

Systematic position: A Milne Edwards included *Rhabdonotus* in a position near the Trapeziinae Miers and *Cymo* de Haan in the family Xanthidae MacLeay. *Caphyra archeri* was classified by Walker (1887) in the Portunidae Rafinesque since the Caphyrinae Alcock are a subfamily of the Portunidae. Balss (1934:506) suggested that the genus should be excluded from the Portunidae and included in "formes aberrantes des Oxyrhynches". Later, Balss (1957:1650) classified *Rhabdonotus* in the Xanthidae, or more precisely in Xanthinae, noting that its systematic position was uncertain. Following a detailed analysis, Serène and Romimohtarto (1963) concluded that *Caphyra archeri* was a junior synonym of *Rhabdonotus pictus* and that it should be placed in the Eumedoninae. After general revision of the Eumedonidae Stevcic *et al.* (1988) concluded that the genus *Rhabdonotus* should be referred to the subfamily Eumedoninae Dana.

The principal reason for the confusion of the status of this species is due to the somewhat aberrant form of its carapace. Specifically, in this genus the distinct spine at the junction of the anterolateral and posterolateral margins is absent, so that the lateral margin is rounded. However, in all other characters it agrees with the Eumedonidae, as follows: prominent front, oblique folding of antennulae in well developed fossae; the shape and position of the basal antennal segment which fills up the inner orbital hiatus and does not reach the frontal margin; the disproportionally voluminous chelipeds; the "pulley"-like propodus/daetylus articulation (locking mechanism), permitting better attachment to the host; the structure of the sternum (sutures 4/5 and 5/6 are interrupted, whereas 6/7 and 7/8 are continuous); the form of the male first pleopod (slender and sinuous); and all 7 abdominal segments are freely articulated.

Family Portunidae Rafinesque
Brusinia gen. nov.
(Tables 1-2)

Type species. *Brusinia brucei* sp.nov.

Etymology. The generic name *Brusinia* is derived from the name of the Croatian zoologist (carcinologist), Spiridion Brusina (1845-1908) (pronunciation: broosseena). Gender: feminine.

Diagnosis. Carapace subelliptical, about 1-2 times longer than wide, surface smooth and glabrous, finely granular, regions indistinct. Front lamellar, trilobate and projecting. Anterolateral margin shorter than posterolateral, with three teeth (postorbital tooth or angle excluded), no marked transition between anterolateral and posterolateral margins. Antennulae transversely folded. Urinal article distinct. Basal antennal article cylindrical, flagellum recurved. Eyes normally developed. Sub- and supraorbital borders entire, without incisions or fissures, postocular angle well developed. Buccal cavern quadrangular, in-

Table 1. Differences between *Benthochascon hemingi* and *B. elongatum* sensu Sakai (1969).

CHARACTERS	*B. hemingi*	*B. elongatum*
Carapace		
Form	subquadrilateral	subelliptical
Surface regions	faintly indicated	indistinct
Maximal width	posterior tooth (3)	penultimate tooth (2)
Hindmost tooth	longest, spiniform	smaller than other teeth
Transition between anterolateral and posterolateral borders	distinct, pointed	indistinct, absent
Frontal lobes		
Size	nearly equal	median lobe smaller
Median lobe	bifid (notched)	triangular
Antennae		
Basal article	with small spinule at outer angle	cylindrical, no spinules
Flagellum	usual position	transverse
Antennulae		
Folding	nearly transverse	transverse
Maxillipeds		
Merus of third pair	long as wide	broader than long
Chelipeds		
Fingers	long as palm or longer	shorter than palm
Chelae opening	longitudinal	oblique
Dentition of occlusive margin	teeth fairly long, stout	low, triangular
Walking legs (pair 1-3)		
Distal upper end of merus	with notch and tooth	rounded
Dactyl of third pair	as preceding 2	upper ridge with backward oriented setae
Dactyls	stiliform, proximally depressed	leaf-like, laterally compressed
Swimming legs (pair 5)		
Dactyl end (tip)	pointed (mucronate)	rounded
Upper margin fringe	with short setae directed laterally	with short setae directed backwards
Lower margin fringe	with short setae directed laterally	with long plumose setae
Male abdomen		
Form	widely triangular	elongated and narrow
Male first pleopod		
Form	rather stout	slender
Position	slightly distally diverging	straight, nearly parallel
Terminal part	simple	distorted

completely covered by the third maxillipeds. Chelipeds large, with fingers opening in oblique plane, fingers shorter than palm, smooth, glabrous and finely granular (as carapace). Walking legs stout, shorter than chelipeds, three anterior pairs with dactylus elongated, compressed, leaf-like fringed dorsally by short setae; last pair fringed by setae, dactyl lamellate and leaf-like, with rounded tip. Thoracic sternum elongated, with 4/5-7/8 sutures interrupted. Abdomen elongated and narrow in both sexes, first two and a part of the third abdominal segment visible in dorsal view. In the male, 3-5 segments more or less fused, immovable, but articulations very distinct. Third abdominal segment in the male not noticeably wider than the fourth one. Male first pleopod basally stout, distally straight. Second pleopod longer than first and distally recurved.

Remarks on the genus. Historical background: Sakai (1969) described an aberrant portunid crab and classified it in the genus *Benthochascon* Alcock and Anderson, 1899, under the name *B. elongatum*. Subsequently Takeda (1978b) reported 10 specimens from the same locality as the holotype. Later, during

Table 2. Differences between Japanese and Australian specimens of *Brusinia* gen.nov.

CHARACTERS	Japanese specimens (*B. elongata* (Sakai, 1969))	Australian specimens (= *B. brucei sp. nov.*)
Sternum		
Sparse long setae on sternite 3-4	present	absent
Sternum in male		
Sutures 6/7, 7/8	grooved	not grooved
Anterior end of sternite 8	sunken, invisible	at same level as sternite 7
Abdomen		
Setae on 1-3 segments	long (Fig.2a)	short (Fig.2b)
Setae on segment 3	reaching those on 2	not reaching those on 2
Glabrous median part on segment 3	narrower than 2	same length as 2
Telson of male	fringed by setae (Fig.3a)	glabrous (Fig.3b)
Male pleopod 1		
Apical part	distorted	asymmetrical, almost straight
Conical spinules	on distorted part, numerous	only on apical part, sparse
Short setae subapically	present (4)	absent

cruises of the R.V. *Soela*, two similar specimens were collected and the evaluation of these specimens provides the subject of the present contribution.

During examination of this material it was questioned whether *B. elongatum* actually belonged to the genus *Benthochascon*, and whether in fact the Australian specimens belong to *B. elongatum* at all. In order to answer these questions detailed re-examination of material and comparisons with others have been made.

Homogeneity of the genus *Benthochascon*: The following comparison is based on the description and illustrations of the genus *Benthochascon*, namely *B. hemingi* (Alcock and Anderson 1899; Alcock 1899a,b; Doflein 1904; Stephenson 1972; Sakai 1976), a BMNH specimen of *B. schmitti* Rathbun, and with the three NSMT specimens of *B. elongatum* obtained by Dr. M. Takeda: i.e. (1 male NSMT Cr.6934, CL 7.9, CW 6.5 mm; 1 female ovig., NSMT Cr. 5591 (damaged); 1 male NSMT Cr.5598, CL 9.5, CW 7.5 mm). The differences in the major taxonomic characters are presented in Table 1.

As evident from this table, the differences are not only just "variation on a theme", as normally shown by members of a genus, but they actually represent two different "themes": or in other words, I consider that they belong to two separate genera. The differences refer to the form of the carapace, in particular the frontal region, chelipeds, pereiopods and male pleopods. Consequently, *B. elongatum* requires the creation of a new genus.

Similarly, in order to establish the identity and determine differences between the Japanese and Australian crabs, specimens from both areas were compared. The results of this comparison are presented in Table 2. Although only two Australian specimens were available, they were both adults, male and female (ovigerous), and as such were eminently suitable for further study. The Australian and Japanese specimens show a number of differences, although initially appearing superficially very similar. However, significant differences were found in the sternal and abdominal structures, and in particular in the male first pleopods. Because of these differences it seems justifiable to separate the Australian forms as a distinct new species, although it would be preferrable that a greater number of specimens were available to document the species' variation. For instance, one male specimen from the Japanese waters had an indistinct 2/3 sternal suture, similar to that of the unique male specimen of the Australian crabs, but in another male specimen from Japanese waters this suture was very prominent.

Brusinia brucei sp. nov.
(Figs. 2b, 3b, 5, 6a,b)

Material. HOLOTYPE - NTM Cr.0007871: 1 male, CL 7.5 mm, CW 6.6 mm. PARATYPE - NTM Cr.0007872: 1 female ovig., CL 7.6 mm, CW 6.3 mm; *Soela* cruise ASO 283, stn. B-12 (NSW20), 28 April 1983, beam trawl, 80 m. 19° 03.5'S, 119° 03.6'E.

Description. Carapace subelliptical (Figs. 6a-b), longer than wide, with maximal width at second (penultimate) lateral tooth, longitudinally moderately convex, transversely very slightly convex, but concavity a little more expressed on posterior pair of the carapace. Dorsal surface smooth, glabrous and very finely granular, without distinct furrow or regions. Front forming lamellar trilobate projection, lateral lobes bluntly rounded apically, median lobe smaller and triangular in outline. Preorbital tooth absent. Front separated from upper orbital margin, which is entire (no traces of fissures) and slightly elevated anteriorly, forming a short eave over the basal part of eyestalk. External orbital tooth large and pointed apically, suborbital margin entire, inner suborbital angle wide, orbital hiatus wide. Anterolateral border shorter than posterolateral one and cut into three procurved teeth, first two subequal, last tooth smaller. Posterior margin narrow, straight. Antennulae folding transversely into their fossae. First (urinal) antennal segment distinct, basal (2+3) segment slender, cylindrical, longitudinally directed, not filling completely the orbital hiatus, fourth segment nearly as thin as basal, slightly shorter, entering orbital hiatus, fifth antennal segment shortest entering orbit, upwardly directed; flagellum moderately short, recurved backward, reaching or slightly overlapping upper orbital margin. Orbits deep, eye large, eyestalk short and thick, cornea rounded.

Epistome well developed, provided with median anterior projection. Proepistome and epistome not distinctly separated by a transversal suture. Buccal cavern quadrangular, rather broader than long, not completely covered by third maxillipeds. Ischium of third maxilliped longer than merus, merus broader than long. Endostome with obliquely directed endostomial ridge, less marked on anterior border of endostome.

Chelipeds rather large, subequal, smooth, glabrous and finely granular (similarly to the carapace). Merus short, prismatic. Carpus subquadrate with short spine on inner angle, surrounded by long plumose setae, chela distally flattened, palm high, convex on outer surface and slightly concave at inner surface, slightly deflected downward distally, fingers noticeably shorter than palm; fixed finger short, proximally broad, triangular in outline; movable finger slender, strongly curved inward in the distal half. Tips of fingers crossed in repose, cutting edge sharp, composed of irregular low, broad, triangular molariform teeth (superficially similar to molars of the Carnivora) less distinct and somewhat reduced on movable finger.

Ambulatory legs stout, shorter than chelipeds, laterally compressed, particularly dactyls; more or less setose on the dorsal margin, in particular meri; dactyls on three anterior pairs of ambulatory legs (2-4 pereiopods) elongate, leaf-like, i.e. enlarged (but not lamellate), upper margins straight, ventral margins irregularly semielliptical, tips of dactyls bluntly pointed, and slightly recurved forward, particularly in anterior two ambulatory legs, third more or less straight. Upper margin of each dactylus fringed with short setae, oriented forward on first two pairs, backward on third pair, last pair of legs paddle-like, and conspicuously setose, dactyl subelliptical, apically rounded, distal part fringed with long setae;

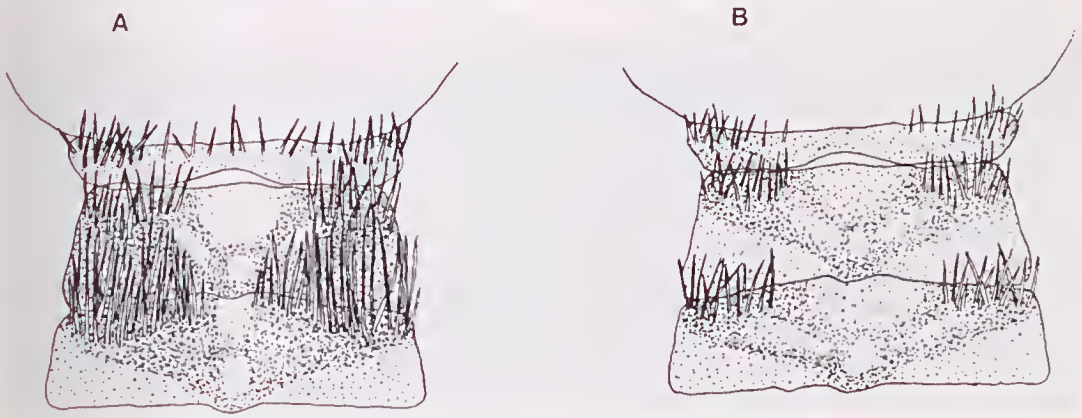

Fig. 2. Proximal abdominal segments. **a**, *Brusinia elongata;* **b**, *B. brucei.*

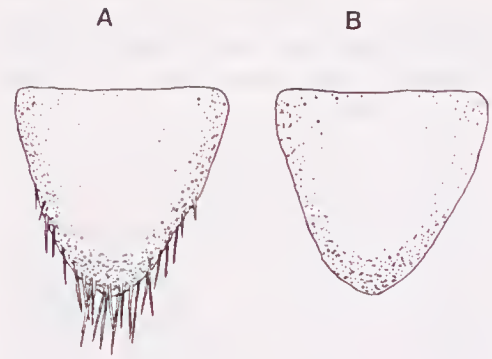

Fig. 3. Telson. a, *Brusinia elongata*; b, *B. brucei*.

dorsal margin of carpus and propodus bearing sparse long setae; very dense short setae directed posteriorly backward, ventral margin bearing long dense setae from carpus to end of dactylus.

Abdomen relatively narrow, elongated in both sexes. First segment very short, with sparse setae (Fig. 2b), particularly on both sides, second and third segments with lateral areas with setae on distal part, proximal two and part of the third abdominal segments visible in dorsal view, all articulations between segments distinct, in male 3-5 segments more or less coalescent, and immovable. Telson triangular with rounded apex (Fig. 3b).

Thoracic sternum relatively elongated. The sternal sutures 4/5 to 7/8 interrupted. Median furrow on 7th and 8th sternites, sternal sutures 6/7 and particularly 7/8 with inner ends near the median furrow, sternites 5 and 6 transversely, 7th and in particular 8th, obliquely posed. Episternites present. Locking mechanism of abdomen present and functional. Sternoabdominal cavity of moderate depth.

Male first pleopod (Fig.5) basally stout, slightly tapering distally, distal part slender and both pleopods parallel, reaching to sixth sternite. Distal part provided with scattered spinules, apex bluntly rounded. Male second pleopod longer than first, slender, straight distally (near apex of the first pleopod), regularly recurved inward so that apex orientates backward and recurved parts of one superimpose on the other.

Etymology. The specific name "*brucei*" is dedicated to the noted Australian carcinologist A.J. Bruce (NTM, Darwin), who provided me with the present material.

Ecology and distribution. No information is available for the species beyond the collection data given above. Since the collection was made by beam trawl at a depth of 80 m, the crabs presumably occur on sedimentary bottoms in which they can bury themselves.

Remarks. The above analysis shows that two species of the genus *Brusinia* exist: *Brusinia elongata* (Sakai, 1969) comb. nov. and *Brusinia brucei* sp. nov.

Systematic position: The systematic position of the genus *Brusinia* is not clear. It is an atypical portunid crab, which differs from all other portunids in many characters, particularly in the form of the carapace, pereiopods and abdomen. It resembles in its general body shape the genera *Portumnus* Leach and *Xaiva* MacLeay, whereas the enlarged dactyls of the ambulatory legs resemble those of *Thia* Leach, *Kraussia* Dana, and partially *Polybius* Leach. Because of these atypical portunid characters *Brusinia* has an isolated position in the systematics of the family Portunidae, with imprecise subfamily placement. *Brusinia* shares some common characters with both Carcininae MacLeay and Polybiinae Ortmann (carapace relatively narrow, anterolateral margin with 3 teeth, antennae lying in longitudinal axis of body, basal antennal segment longer than broad, antennal flagellum enters orbit). Moreover, it shares some characters with members of these subfamilies in its similar form and 2-4 pereiopods (Carcininae), and endostomial ridge, oblong and 7-articulated abdomen (Polybiinae). Ac-

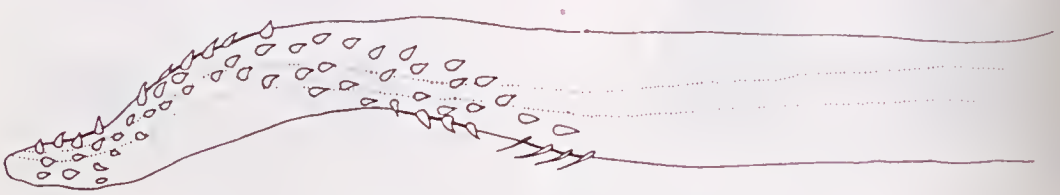

Fig. 4. *Brusinia elongata*, male, first pleopod.

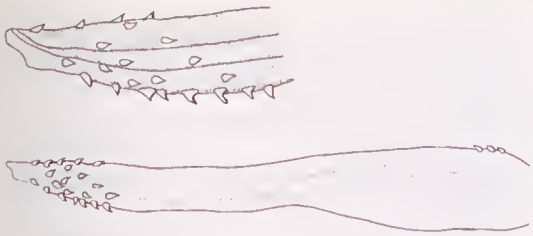

Fig. 5. *Brusinia brucei*, male, first pleopod.

cordingly, without a general revision of the whole family Portunidae the systematic position of this genus should be considered open. These data only permit the conclusion that *Brusinia* represents a different phyletic lineage within the family Portunidae, and its peculiar characters indicate that a new tribe should be erected for the species.

Brusiniini trib. nov.

Diagnosis. Carapace longer than wide. Front slightly projecting, trilobed. Anterolateral border with 3 teeth (postocular excluded). Antennae cylindrical, lying in longitudinal axis of body, entering orbits. Chelipeds with very short fingers which open in oblique plane. Ambulatory legs stout, shorter than chelipeds; daetyls long, lanceolate, compressed; last pair paddle-like. Female abdomen relatively narrow, male oblong and 7 articulated, 3 - 5 segments immovable. Male second pleopod longer than first pleopod and distally recurved.

ACKNOWLEDGMENTS

I would like to express my warmest gratitude to Dr A.J. Bruce (NTM, Darwin) for the opportunity to examine and report on this collection of rare and aberrant Australian crabs, and for his help in correcting and rewriting the English draft of this manuscript. I am also indebted to Drs G. Hartmann (Zoologisches Institut und Museum, Hamburg) for the loan of type specimens of *Planotergum mirabile* and M. Takeda (National Science Museum, Tokyo) for specimens of *Brusinia elongata*. I am very grateful to Drs D. Guinot (Muséum National d'Histoire Naturelle, Paris), R.W. Ingle (The Natural History Museum, London), L. Tiefenbacher (Zoologische Staatssammlung, Munich) and M. Türkay (Forschungsinstitut Senckenberg, Frankfurt) for providing me with literature. I wish to express my appreciation to Drs. M. Takeda and A.B. Williams (National Museum of Natural History, Washington) and M. Türkay for critical reading of an earlier version of the manuscript on *Brusinia*, and to Prof. L.B. Holthuis (Nationaal Natuurhistorisch Museum, Leiden) for some useful nomenclatural advice. Drawings were prepared by Mrs A. Vujnovic (Zoologijski zavod, Zagreb) and Mr E. Zahtila (RBI, Rovinj) and photographs were provided by Mr G. Sosic (RBI, Rovinj). Finally I gratefully acknowledge the financial support of the Scientific Funds of Republic Croatia (Zagreb). (Project No. 1-08-083).

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Fig. 6. *Brusinia brucei*, holotype. **a**, dorsal view; **b**, ventral view.

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Accepted 5 March 1991